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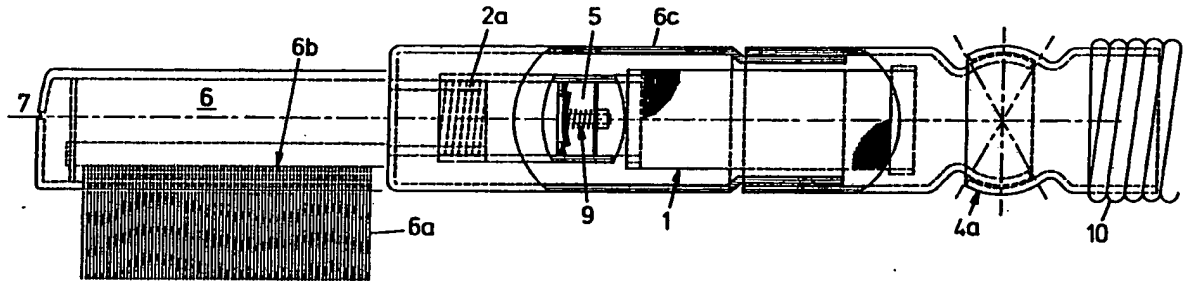
With amended claims.

(54) Title: APPARATUS FOR REMOVING FLEAS FROM ANIMALS



(57) Abstract

The invention relates to an apparatus which can be connected to the suction side of a vacuum cleaner or another source of partial vacuum for removing fleas, lice and the like from animals, in particular pets in the broadest sense, to which apparatus a brush, a comb (6) or a similar object can be coupled which can be moved through the fur of the animal and carry with it the fleas and the like present in the fur, and which apparatus comprises a mesh unit (receptacle 1) with a non-return valve (5) which can be opened by an air flow counter to the action of a return spring (9).

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Title: Apparatus for removing fleas from animals

The invention relates to an apparatus for removing fleas or lice from animals, in particular pets in the broadest sense of the word.

Heretofore, chemical means have been used for this purpose, best known among them being the so-called flea collar, which the animal wears around its neck. Such chemical means constitute a considerable burden on the environment and usually the animals experience them as unpleasant.

These drawbacks are avoided with an apparatus as claimed in claim 1.

The apparatus according to the invention can be connected to a source of suction, for example a vacuum cleaner, and fleas or lice can be collected by means of the comb or brush, whereafter they are sucked up, pass the open non-return valve and are collected in the receptacle, where they are firmly clamped to the walls of the mesh, i.e. they cannot escape while the suction flow is maintained. When the source of suction is switched off and the suction flow drops out the non-return valve closes and the fleas are locked within the receptacle. After it has been used once or several times, the full and closed receptacle can be removed and replaced by a new one. The fleas locked therein can be destroyed in an appropriate manner.

In the following, the invention will be further explained with reference to two embodiments of the apparatus for

removing fleas and the like from the furs of pets, as shown in the accompanying drawings, in which:

Figs. 1 and 2 are cutaway cross-sectional side-views of a first embodiment of the apparatus with closed and open non-return valve, respectively;

Fig. 3 is a side-view of the brush or comb in the embodiment of Figs. 1 and 2;

Figs. 4 and 5 are side-views, corresponding to Figs. 1 and 2, of a second, preferred embodiment of the apparatus; and

Fig. 6 schematically shows the grip coupling with which the apparatus can be connected to the tube of a vacuum cleaner.

According to Figs. 1 and 2, the apparatus for removing fleas and the like from the furs of pets comprises a flexible hose 10 having one end connected to a pipe 2 by means of a detachable screw coupling 4. The pipe 2 extends through a stopper 3 of rubber, cork or a similar resilient material for sealing the connection of the attachment to the suction tube 11 of a vacuum cleaner or other apparatus with which a reduced pressure can be created.

The relevant end of the pipe 2 is provided with a screw coupling 2a for detachably attaching a mesh unit 1 in the form of a fine-meshed receptacle. The receptacle 1 is provided with a non-return valve 5 which is biased into the closed position by means of a spring 9.

According to Fig. 3, the other end of the hose 10 comprises a screw coupling 8 for connecting a comb or brush 6,

which is provided with suction openings 6b between the teeth or the brush hairs. At the head of the comb or brush a suction opening 7 is provided through which fleas can be sucked up from places which are difficult to reach with the comb or brush.

According to the preferred embodiment of Figs. 4-6, in which corresponding parts are indicated by the same reference numerals as in Figs. 1-3, the mesh unit 1 is mounted directly in the handle 6c of the comb or brush 6, for example by means of a screw coupling 2a. The non-return valve in this embodiment is a poppet valve 5 which is biased into the closed position by a coil spring 9.

The handle 6c is connected to the flexible hose 10 by a swivel coupling, which is shown as a ball-and-socket joint 4a, which hose 10 can be coupled to a tube 11 of a vacuum cleaner by means of a grip coupling 12.

CLAIMS

1. An apparatus which can be connected to the suction side of a vacuum cleaner or another source of partial vacuum for removing fleas, lice and the like from animals, in particular pets in the broadest sense, to which apparatus a brush, a comb (6) or a similar object can be coupled which can be moved through the fur of an animal and carry with it the fleas and the like present in the fur, and which apparatus comprises a mesh unit (receptacle 1) with a non-return valve (5) which can be opened by an air flow counter to the action of a return spring (9).

2. Apparatus according to claim 1, characterized in that the apparatus can be connected to a suction tube (11) of a vacuum cleaner or the like by means of a flexible hose (10) and a gripping sleeve coupling (grip coupling 12).

3. Apparatus according to claim 1 or 2, characterized in that the apparatus comprises a ball-and-socket joint (4a).

4. Apparatus according to any one of the preceding claims, characterized in that the mesh unit (1) with the non-return valve (5, 9) is designed as a replaceable, detachable unit.

5. Apparatus according to any one of the preceding claims, characterized in that the comb or brush (6) comprises a cylindrical housing with suction openings (6b) between the teeth or brush hairs (6a) extending radially therefrom and a suction opening (7) is present at the head thereof.

AMENDED CLAIMS

[received by the International Bureau on 23 March 1992 (23.03.92);
original claims 1 and 4 replaced by amended claim 1;
claims 2 and 3 replaced by amended claim 3;
claim 5 replaced by amended claim 4; new claim 2 added (1 page)]

1. An apparatus which can be connected to the suction side of a vacuum cleaner or another source of partial vacuum for removing fleas, lice and the like from animals, in particular pets in the broader sense, to which apparatus a brush, a comb (6) or a similar object can be coupled which can be moved through the fur of an animal and carry with it the fleas and the like present in the fur, and which apparatus comprises a receptacle (1) provided with a non-return valve (5) which can be opened by an air flow, said receptacle together with said non-return valve being detachably mounted within said apparatus, characterized in that said receptacle (1) being a mesh unit and said non-return valve being a spring (9) biased valve.

2. Apparatus according to claim 1, characterized in that said non-return valve being a spring biased poppet valve (5).

3. Apparatus according to claim 1 or 2, wherein the apparatus can be connected to a suction tube (11) of a vacuum cleaner or the like by means of a flexible hose (10), characterized in that said apparatus comprises as a connecting means to said flexible hose (10) a gripping sleeve coupling (grip coupling 12) and a ball-and-socket joint (4a).

4. Apparatus according to any one of the preceding claims, characterized in that the comb or brush (6) comprises a cylindrical housing with suction openings (6b) between the teeth or brush hairs (6a) extending radially therefrom and a suction opening (7) is present at the head thereof.

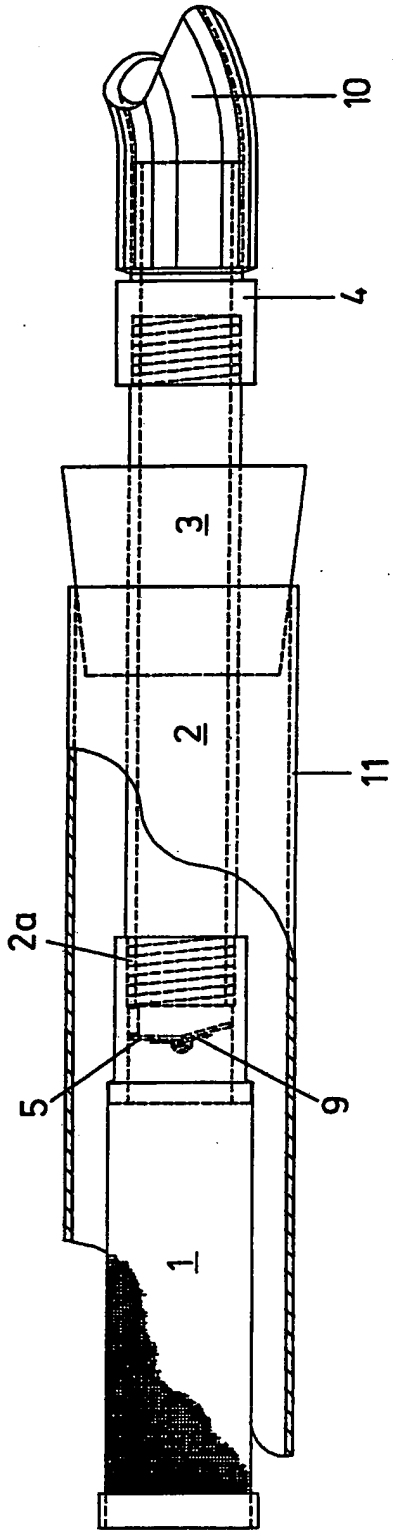

FIG.1

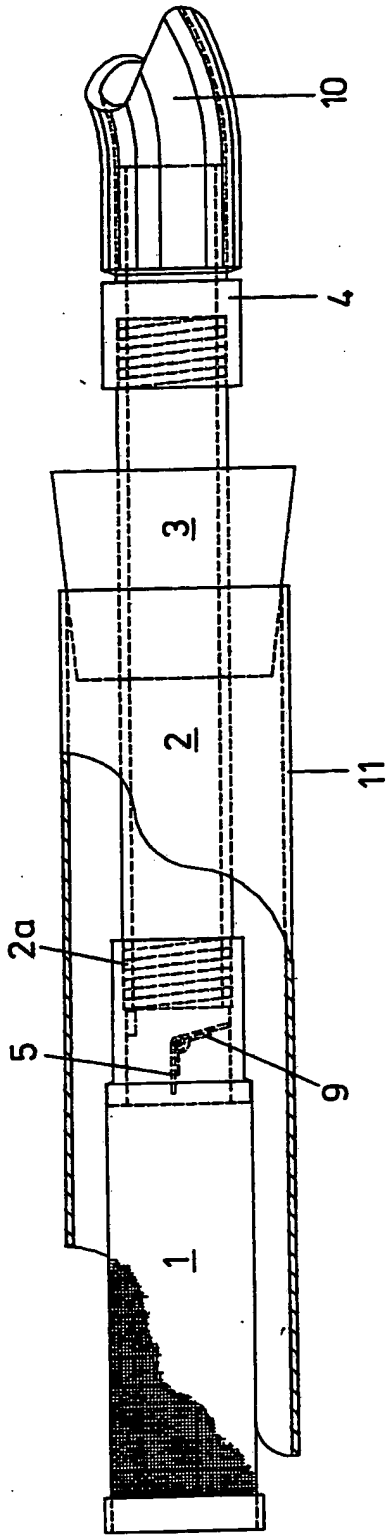

FIG.2

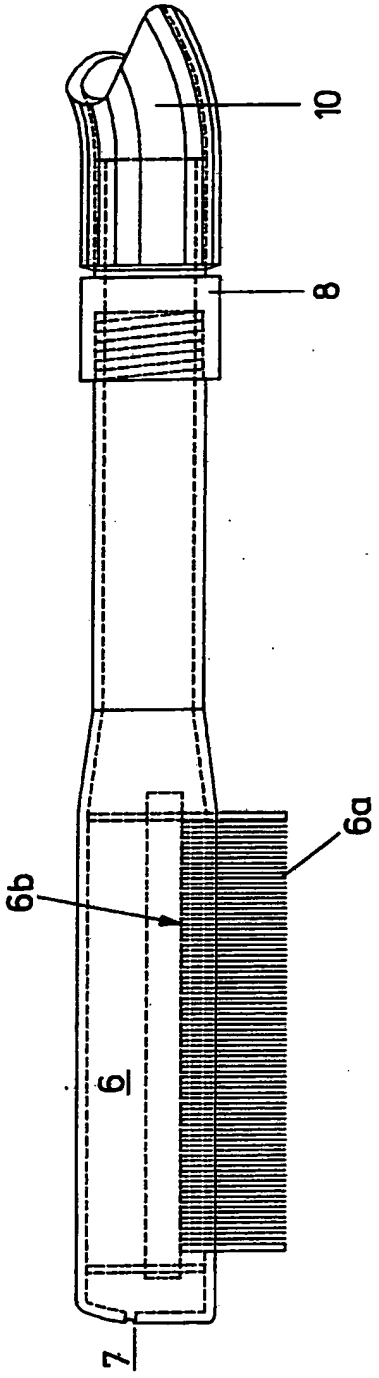

FIG.3

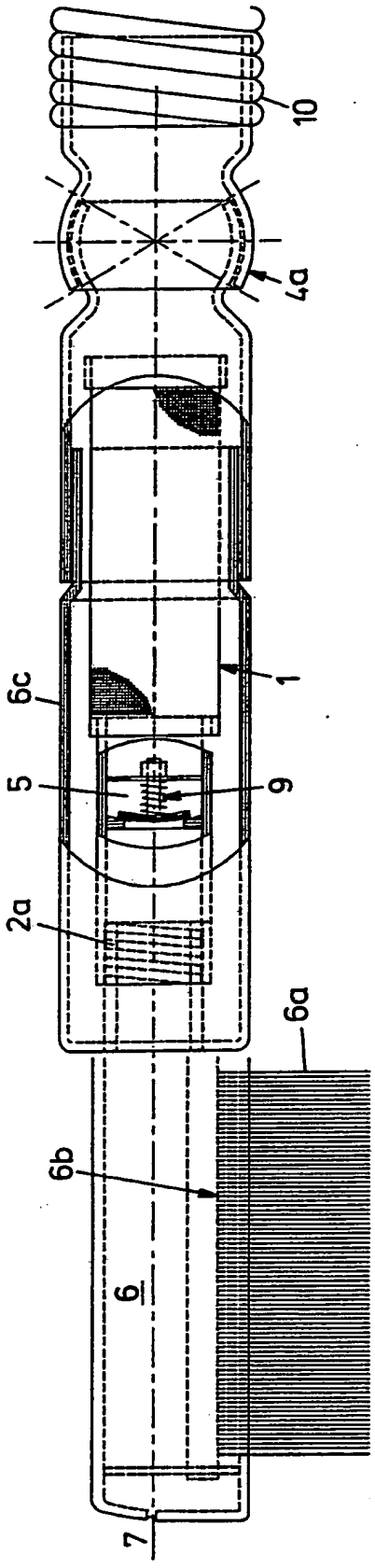

FIG. 4

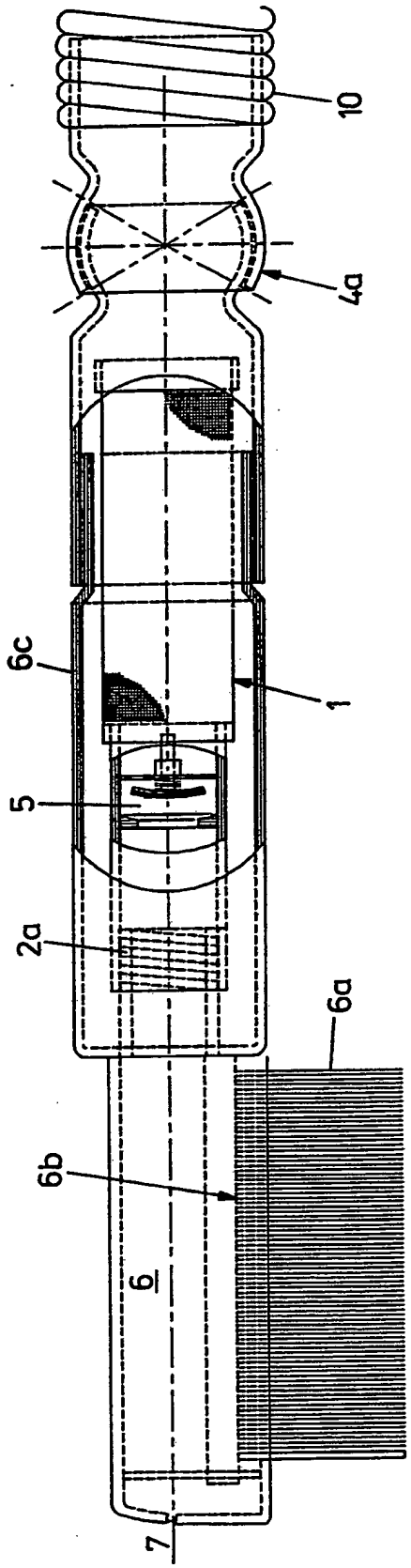

FIG.5

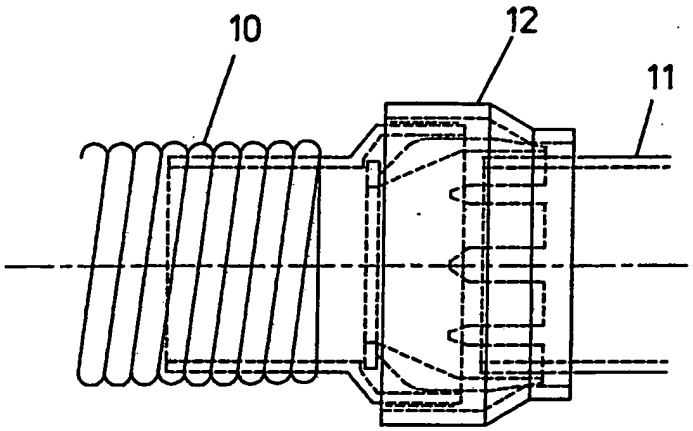

FIG.6

INTERNATIONAL SEARCH REPORT

International Application No PCT/NL 91/00216

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 A01K13/00; A47L7/00; A47L9/00

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
Int.Cl. 5	A01K ; A47L

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched[8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category °	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
X A	US,A,4 279 095 (AASEN) 21 July 1981 see column 4, line 14 - line 65; figures 1-4	1,2,5 3,4
X	US,A,4 485 583 (PLANTY) 4 December 1984 see the whole document	1,2,4
A	US,A,4 630 329 (SHORES) 23 December 1986	
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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
07 JANUARY 1992	23. 01. 92
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	VON ARX V.U.

Form PCT/ISA/210 (second sheet) (January 1985)

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. NL 9100216 SA 52730

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A-4279095	21-07-81	None	
US-A-4485583	04-12-84	None	
US-A-4630329	23-12-86	None	
US-A-2648867		None	

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